CLAIMS

What is claimed is

1. An apparatus for separating luminance and chrominance signals, the apparatus comprising:

first, second, third, and fourth delayers connected to a digital composite video signal in series, the first, second, third, and fourth delayers for delaying input signals each by 1 horizontal period;

a first filter for separating a first chrominance signal from signals output from the first and second delayers;

a second filter for separating a second chrominance signal from signals output from the second and third delayers;

a vertical edge direction detector for detecting a vertical edge direction based on signals output from the second and fourth delayers and the digital composite video signal;

a multiplexer for outputting one of the first and second chrominance signals according to a signal output from the vertical edge direction detector;

a chrominance signal outputting unit for receiving the signal output from the multiplexer and for outputting a perfect chrominance signal; and

a luminance signal outputting unit for receiving the signal output from the second delayer and the perfect chrominance signal and for outputting a perfect luminance signal.

2. The apparatus of claim 1, wherein the first and second filters are each comb filters.

3. The apparatus of claim 1, wherein the first filter comprises:

a first subtractor for subtracting the signal output from the first delayer from the signal output from the second delayer; and

a first divider for dividing a signal output from the first subtractor by 2 and outputting a signal output from the first filter.

4. The apparatus of claim 1, wherein the second filter comprises:

a second subtractor for subtracting the signal output from the third delayer from the signal output from the second delayer; and

a first divider for dividing a signal output from the second subtractor by 2 and outputting a signal output from the second filter.

5. The apparatus of claim 1, wherein the vertical edge direction detector comprises:

a third subtractor for subtracting the signal output from the fourth delayer from the signal output from the second delayer;

a fourth subtractor for subtracting the digital composite video signal from the signal output from the second delayer;

a first absolute value calculator for calculating an absolute value of signals output from the third subtractor;

a second absolute value calculator for calculating an absolute value of signals output from the fourth subtractor; and

a comparator for comparing the absolute values output from the first and second absolute value calculators.

6. The apparatus of claim 1, wherein the chrominance signal outputting unit comprises:

a low-pass filter for filtering the output of the multiplexer; and

a first limiter for limiting the output of the low-pass filter to a predetermined magnitude to output a perfect chrominance signal.

7. The apparatus of claim 1, wherein the luminance signal outputting unit comprises:

a subtractor for subtracting the chrominance signal from the signal output from the second delayer to separate a luminance signal; and

a second limiter for limiting the luminance signal output from the subtractor to a predetermined magnitude to output a perfect luminance signal.

8. The apparatus of claim 1, wherein the first through fourth delayers each comprise line memories.